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EE-801
ELECTRIC POWER GENERATION

External: 100
Sessional: 50

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Part-A

1. Introduction:
Electrical energy sources, organization of power sector in India, single line diagram of thermal, hydro and nuclear power stations.

2. Loads and Load curves:
Maximum demand, Group diversity factor, Peak diversity factor, Types of load, chronological load curves, load-duration Curve, mass curves, load factor, capacity factor, utilization factor, base load and peak load plants, load forecasting.

3. Power Plant Economics:
Capital cost of plants, annual fixed cost, operating costs and effect of load factor on cost of energy, depreciation.

4. Tariffs and power factor improvement:

Part-B

5. Selection of plant:
Plant location, plant size, no. and size of units in plants, economic comparison of alternatives, annual cost, rate of return, present worth and capitalized cost methods.

6. Economic operation of steam plants:
Methods of loading turbo-generators, input- output curve, heat rate, incremental cost, method of lagrangian multiplier, effect of transmission losses, co ordination equations, iterative procedure to solve co-ordination equations.

7. Hydro-thermal co-ordination:
Advantages, combined working of run off river plant and steam plant, reservoir hydro plants and thermal plants-long term operational aspects, scheduling methods.

8. Pollution and environmental problems:
Energy and environment, Air pollution, Aquatic impacts, nuclear plant and hydro plant impacts.

9. Cogeneration:
Definition and scope, Topping and Bottoming Cycles, Benefits, cogeneration technologies.

Recommended Books:
2. Power Plant Engineering Dom Kundwar.
EC-811
Neural Networks and Fuzzy Logic

External: 100
Sessional: 50

Course Duration: 45 lectures of one hour each.
Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Part-A

Fundamentals of Neural Networks

Supervised Learning
Learning and memory, Representation of perceptron, Linear separability, Perceptron Learning. Training of single layer and multi-layer, back propagation training algorithm, Applications of backpropogation, Universal function approximation. (6)

attractors Neural Networks
Introduction, Associative memory, Hopfield networks, Content addressable memory, Bidirectional associative memories. (5)

Part-B

ART Networks
Vector quantization & simplified ART architecture, Architectures & algorithms of ART1 & ART2 networks, Applications. (4)

Self-organizing Feature Map
Introduction, Competitive learning, Maxican Hat networks, SOFM algorithm, Applications. (5)

Fuzzy Logic
Basic concepts of Fuzzy Logic, Fuzzy vs Crisp set, Fuzzy uncertainty & Linguistic variables, membership functions, operations on fuzzy sets, fuzzy rules for approximate reasoning, variable inference techniques, defuzzification techniques, Applications of fuzzy logic, Fuzzy system design. (5)

Books Recommended:
1. Neural Networks – A Classroom Approach by Satish Kumar, TMH.
2. Neural Networks, fuzzy Logic, and Genetic Algorithms by Rajasekaran & Vijayalakshmi Pai, PHI.
5. Fuzzy Logic with engineering applications by Ross, Mc-Graw Hill.

EC-861
Neural Networks and Fuzzy Logic Lab

L T P
0 0 3

External: 25
Sessional: 50

Practicals related to Theory.
EC- 812
Embedded Systems

L T P
3 1 0

External: 100
Sessional: 50

Course Duration: 45 lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

PART-A
Introduction Review of Embedded Hardware

PIC Micro controller & Interfacing

PART-B

Introduction to Real Time Operating Systems: Task And Task States, Tasks and Data, Semaphores and shared data (5)

Operating System Services: Message queues, Mailboxes and Pipes, Timer Function, Events, Memory Management, Interrupt Routines in an RTOS Environment, Basic Design Using RTOS. (7)

Book Recommended:

EC-862
Embedded Systems Lab

L T P
0 0 3

External: 25
Sessional: 50

Practicals related to Theory.
IBM-801
Research Methodology

L T P
3 1 0

External: 100
Sessional: 50

Course Duration: 45 lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Objectives: The main objective of this subject is to help the students to understand the nature, scope, complexities and process of defining a business research question. The learning focus is on developing business research skills to underpin the approach taken to a work integrated project.

PART-A

Introduction: Meaning, Features, Objectives/Motives, Steps & Types of Research; Attributes of good Research, Research Methods and Research Methodology; Research Process, Significance of Research in Managerial decision making. (8 hrs)

Research Design: Meaning, Characteristics and various concepts relating to research design and classification of research design, Importance, Design for different types of research. (5 hrs)

Concepts: Concept, Constructs, case study and Variables. (3 hrs)

Formulation of Hypothesis: Meaning, Characteristics and Concepts relating to testing of Hypothesis, Types of Hypothesis, Procedure of testing Hypothesis. Chi – Square test. (5 hrs)

PART-B

Data Collection: Sources of Data-Primary/Secondary Methods of collecting data; direct personal interview, indirect oral interview, information through local agencies, mailed questionnaire method, schedule sent through enumerators; questionnaire and its designing and characteristics of a good questionnaire. (8 hrs)

Sampling Design: Meaning, Need, Purpose and Principles of Sampling, Types of Sampling. (5 hrs)

Data Analysis & Interpretation: Introduction to Multivariate analysis- Multiple and partial correlation, multiple regression analysis (with two independent variables), specification of regression models and estimation of parameters, interpretation of results. Analysis of Variance (ANOVA)-One way and Two way ANOVA. (Numerical not to be asked) (6 hrs)

Report writing: Style/format, contents and essential steps for report writing. (5 hrs)

Internal Assessment:
Sessionals 15+15 marks
Quiz/Project/Assignment: 20 marks

Text Books:
Reference Books:
2. Ranjit Kumar: Research Methodology, Pearson Education.
IBM-802
Financial Management

L T P
3 1 0

External: 100
Sessional: 50

Course Duration: 45 lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Objective: The objective of this course is to create basic understanding of corporate finance, Capital Budgeting decisions, working capital management, project management etc in the Engineering profession.

PART-A

Corporate Finance

Working Capital Management
Concept, Need and Types of Working Capital Management of Cash, Inventory, Accounts Receivable and Accounts Payable, Over and Under Trading. 6hrs

Ratio Analysis

Techniques of capital Budgeting : Various types of Capital Budgeting, Payback method, NPV, IRR, ARR, Capital Rationing. 6hrs

Cost of Capital: Cost of Enquiry, Cost of Debt, Cost of Retained Earnings, Weighted Average cost of Capital. 3hrs

PART-B

Portfolio Management
Securities, Markets, Stock Exchanges, Risk Return, Relationship, Portfolio Structures. 6hrs

Dividends, Bonus and Rights
Dividends Policy, Legal Requirements for issue of Bonus Shares, Right Shares and Share Premium. 6hrs

Financial Management in Public Enterprises.
Concept & its applications 4hrs.

Concept of Leverages
Operating, Financial and Combined 3 hrs.

Optimum Capital Structure
EBIT-EPS Relationship, Tax shield Analysis 3 hrs.
Suggested Readings: